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TONNAGE TAX ON ALIEN OFFICERS.

The Treasury Department has sent out for the information of all collectors of customs copies of a letter from Commissioner of Navigation Chamberlain, relative to tonnage dues based on the action of the department in the matter of Capt. Rice, of the schooner Halcyon, trading from port to port on the Pacific coast. Capt. Rice shipped an alien as second mate and afterwards rated him in the articles as an able seaman, but employed him as second mate and paid him $20 per month extra to make second mate's wages, he performing duties accordingly. The customs officer imposed a tax of 50 cents per ton on the vessel, but made an application for a refund of the money. Shipowners and masters of vessels generally desired a ruling whether section 1428 revised statutes, applies to alien officers on American vessels trading from port to port in the United States. This section provides that the "officers of vessels of the United States shall in all cases be citizens of the United States." "It is plain," says Mr. Chamberlain, "that officers are required to be citizens of the United States and that unless the masters are citizens the vessels lose the privileges of vessels of the the United States, whether entering from foreign ports or not, and the alien tax applies."

NEW DOCKS AT PETOSKEY.

The Chicago & West Michigan is getting estimates on big dock to be built out into water presumably deep nough to admit of the landing of the Manitou, which as heretofore landed only at Harbor Springs. The sale f the Shay water works to the village of Harbor prings makes certain the extension of the West Michian Railroad from Petoskey to the harbor and Mackinaw ity via Cross Village, as the Shays, who are acting for e West Michigan, have been anxious for a year past to rn their capital from the water works to railroading.

REORGANIZATION IN CANADA.

certain amount of reorganization and reconstruc- of the staff of the Canadian Department of Marine l Fisheries has been looked forward to for some e, and several changes will probably be made before g. The first of these changes, it is understood, will ely be the placing upon the retired list of Mr. Samuel ilmot, dominion superintendent of fish culture, and r. Samuel Pierre Bauset, chief clerk. Since the appointment of the commissioner of fisheries the necessity has ceased for a superintendent of fish culture. Mr. Wil ot, who is in his seventy-third year, has been in public service since June, 1866, and Mr. Bauset, who is in his sixty-third year, entered the service in April, 1854, and is accordingly approaching the close of his forty-first year as a public official. He might have retired six years ago with his full superannuation allowance. The present salaries of these two gentlemen are $2,400 each.

BIDS FOR HARBOR WORK.

Colonel Jared A. Smith, United States Engineer, opened at his office in Cleveland Tuesday the bids for harbor improvement work at Conneaut, Lorain (Black River), Huron and Monroe, all on Lake Erie.

The successful bidders at Conneaut were as follows: Hemlock lumber, Cassius M. Carrier, $10 per thousand; white pine, Emery D. Wiemer, $21.37; white oak, William Howard Prescott, $24.70; stone, Kelley's Island Lime and Transportation Company, $5.55 per cord, loaded on scows; iron, W. M. Patterson, $1.54 per cwt. for screw bolts, $1.29 for drift bolts, $1.74 for iron rods, and $1.70 for spikes.

At Monroe, C. E. Mitchell & Co., and the Upson Nut Company were the lowest bidders. The former bid $21.85 per thousand for white pine, the amount necessary for the improvement costing $2,745.93. The latter bid $1.55 per cwt for drift bolts and $1.95 for spikes, a total of $111.81.

John Stang was the successful bidder on the Black River and Huron work, his bid being in each case $23 for hemlock, $33 for white pine, $40 for white oak, $5.75 for stone 4c per pound for iron plates, 3c for drift bolts, 4c for spikes, 4c for screw bolts and washers, with 95c per cubic yard for dredging.

NEW CLEVELAND & BUFFALO BOAT.

A meeting of the directors of the Cleveland & Buffalo Transit Co. will be held within a few days, to pass upon bids for the new steamer which the company propose to add to their fleet. A member of the board said a few days ago that it was desired to award the contract to a Cleveland firm, and that this would be done if the figures at all justified such award. Other companies had, however, asked to be allowed to make figures, and the request could not well be refused. The same gentleman states that he, with the other stockholders, is very well pleased with the showing made by general manager Newman for last season, from which the following interesting figures may be quoted: Number days operated, 235, an increase of 35 as compared with the initial season of 1893; round trips, 189, an increase of 11; total number miles run, including short trips, 71,194, an increase of 4,030; total number of landings, 1,890, an increase of 110. There was an increase of 65 per cent. in the freight earnings over the first season, and of 45 per cent. in the passenger traffic exclusive of the short excursions, which showed a slight falling off, due to the fact that the company's boats could not be taken out of regular service as often as was necessary to do the short distance excursion business justice.

The new steamer will be of the sidewheel type, and of the same general dimensions, in machinery and hull, as the Detroit & Cleveland Liner, City of Detroit. The new boat will, however, have the benefit of all the latest improvements, and an added stateroom capacity.

Of course it will now be impossible for any shipyard to turn out a $300,000 passenger boat in time to take part in next season's business. It is understood, too, that as the boats now owned by the company proved insufficient for the Cleveland and Buffalo traffic, a third boat will operate in the line under charter. The name of this steamer has not been made public, but she is said to be a speedy salt water propeller, which will be brought to the lakes as soon as St. Lawrence River navigation is opened.

At the annual meeting of the company, Messrs. M. A. Bradley, George W. Gardner, D. Shurmer, R. C. Moodey, T. F. Newman, Harvey D. Goulder, and George W. Avery were chosen to serve as directors for another year. Mr. Avery has not yet served a year, having been chosen by the board after the death of Mr. J. K. Bole, to fill the vacancy in the directory.

A NEW DIVING APPARATUS.

John D. Cooper, an inventor, of Cheyboygan, Mich., has secured a patent on a new diving apparatus. The invention consists of an airtight chamber, to contain one or several operatives, and adapted to be sunk near a vessel's hull or wherever desired. It may have boring or other tools with suitable diving mechanism, readily operated, the tool being so carried that it may be changed without going to the surface while it can also be directed horizontally or vertically. This diving chamber or car is adjustably supported in position, may be moved about, has means of communication with those above the surface, and means of illuminating the outside of frame while the work is being performed.

NEWS AROUND THE LAKES.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

The Union Dry Dock Co. are lengthening one of their docks to 400 feet, to accommodate the larger types of boats.

Capt. H. B. Nelson will sail the Geo. T. Hope, and Capt. H. A. Jansen the schooner Fitzpatrick next season. Both are reappointments.

It is understood that Capt. E. L. Smith, of the Northern Queen, will sail the North West next season. Capt. Campau will bring out the North Land.

Capt. Henry Richardson, part owner in the Viking, will command her next season. She is lying at Tonawanda, with her two consorts, the F. J. Tilden and A. C. Maxwell.

Capt. Fred Rae, who sailed the Elphicke last season, has been assigned by her new owners to the command of the Emily P. Weed. He will be succeeded in the Elphicke by Capt. George N. Trottner, who was in command of the F. W. Wheeler when she was lost near Michigan City, in November, 1893. Last season he was chief mate on large steamers.

Capt. C. H. Gibbs, a well-known lake navigator and former resident of Buffalo, died at Chicopee Falls, Mass., last Friday, aged 64 years. Capt. Gibbs followed the lakes from boyhood up. He sailed on many a vessel in his younger days in various capacities until he became master of the old barks Frank Morell and Francis Palmer. The last boat he sailed was the steamer Arizona of the Anchor Line. About seven or eight years ago he retired from the lake business and went to Massachusetts, where he leaves a widow. Capt. Gibbs had many ups and downs, but always managed to keep his head above water.

CLEVELAND, O.

Special Correspondence to The Marine Record.

Judge Ricks has appointed Clerk Carleton master commissioner to adjust the claims of the creditors of the steamers Michael Groh and Germania, and the schooners H. C. Sprague, Wyandotte, and William Case, which were recently sold at United States marshal's sale.

The Shipmasters' Association will hold open meetings at their rooms on Wednesday afternoons until the opening of navigation. Ensign Cole, U. S. N., in charge of the branch hydrographic office at this port, or Major Stockman, local forecast official of the Weather Bureau, will deliver an address next Wednesday.

The first annual meeting of the stockholders of the Euclid Beach Park Co. was held this week and the following officers and directors were elected: J. R. Irwin, president; W. R. Ryan, vice president; John Flynn, secretary and treasurer; A. E. Thompson, general manager; directors, J. R. Irwin, W. R. Ryan, J. B. Burrows, A. E. Thompson, John Flynn, Samuel H. Crowl, and H. B. Gladwick.

I know THE RECORD never enters into politics, but in my rounds I hear a good deal about the Hon. R. C. Parsons being a representative citizen, a man above reproach, and one whom it is the duty of citizens to elect as their mayor; besides he has done good work for the marine interests of the port, and especially the fulfillment of the breakwater project. Is there any better candidate in the field than R. C. Parsons?

The ball given by the marine engineers on Monday night, according to their annual custom, was one of the most enjoyable reunions of the season and was thoroughly appreciated by an excellent attendance. It is safe to say that a finer body of men, when assembled, than the engineers is not to be found in any association at this port and they were all dancers, too. The local branch of the M. E. B. A. certainly "did itself proud" on this occasion.

The annual meeting of the Mitchell Steamship Co. was held at Mentor this week. The former officers and directors were re-elected. They are as follows: Directors, Capt. John Mitchell, Philip Morris, W. F. Sauber, Thomas Fitzpatrick, Capt. Alfred Mitchell; president and general manager, Capt. John Mitchell; vice president, Philip Morris; secretary, W. F. Sauber; treasurer, Capt. Alfred Mitchell.

The Shipmasters' annual ball on Thursday night last showed that the several committees in charge of the arrangements were fully alive to their duties, especially the supper committee, in which department things went smoother than last year. Capt. Wm. S. Mack, president of the local association, led the grand march with his charming young daughter, Miss Belle, and the commodious Army and Navy Hall was comfortably filled with shipmasters, owners and others connected in various ways with the marine industry of the lakes.

The Cleveland harbor line east of the pier has been changed by order of the Secretary of War so as to allow the Pennsylvania and Lake Shore & Michigan Southern Railroad Companies to improve their property along the shore, and to extend it for a few hundred feet. The officials of neither company will tell yet, but the handling of package freight without always bringing the line boats inside the river, is hinted at. That portion of the harbor line opposite the city park property was changed very little, the line ending at the same point as before, near the Erie street bridge.

MILWAUKEE, WIS.

Special Correspondence to The Marine Record.

Capt. James O. Wood, formerly of the steamer Robert Holland, will command the steamer Walter Vail the coming season.

Capt. John D. Wanvig has got through handling "wind-jammers." He has purchased a one-sixth interest in the steamer George C. Markham and will take charge of her on the opening of navigation.

It is again reported that Sturgeon Bay is to be made one of the terminals of the Ann Arbor ferry boats nex summer. It is also stated that cabins are to be built th entire length of the two big ferry boats, with stateroom and ample cabins.

Capt. Alex. Leis, of Kenosha, anticipates severa weeks of profitable work with his sloop, the Jersey Lil in the spring, when he proposes to go in quest of th flour cargo of the ill-fated steamer Chicora. He figur on securing all the sloop can carry and disposing of th flotsam at Kenosha and Milwaukee.

The Fuller & Rice Lumber & Manufacturing C of Grand Rapids, Mich., has closed a contract with t Danaher & Melendy Co., of Ludington, for about 2,0 000 feet of pine and hemlock lumber. It will be ship to Muskegon by water, and thence taken to Gr Rapids by rail. The Fuller & Rice Lumber Co. will ceive about 8,000,000 additional feet of lumber via water and rail route during the season.

Capt. Michael Fitzgerald, of Port Huron, has c cluded to retire from active service, and his place master of the steamer Pueblo will be taken by Ca Duncan Stalker, who has had command of the steam Omaha for several seasons past. Capt. Stalker's plac in the Omaha will be filled by Capt. H. M. Boyce, formerly in the schooner John B. Merrill, and who last season had charge of one of Capt. McDougall's "wha backs."

A bill has been introduced into the Wisconsin legislature which aims to obviate the difficulties which have been found in taxing vessels. The bill provides that vessels shall be assessed as follows: If under five years of age, at $8 per registered ton; if between five and ten years old, at $6 per ton; if ten years old and over, at $5 per ton. The tax is to be levied at the home port.

DETROIT, MICH.

Special Correspondence to The Marine Record.

Messrs. Stephen B. and U. Grant Grummond are in Florida. They will return about the middle of March.

The Red Star and Star-Cole lines will prorate on river business this year, with C. F. Bielman for traffic manager.

Divers and wreckers are at work trying to raise the steam barge Burlington, suuk at the foot of Columbus street. They expect to have her afloat in a few days.

Capt. Hugh Hagan, who has been in command of the big tug Balize for several seasons, has bought into the steamer Majestic, and will sail her next summer, succeeding Capt. James Lawless.

A dispatch from Saginaw announces the death, aged sixty-three years, of Hon. George F. Williams, one of the oldest and most widely known lumbermen of that valley, from Bright's disease. He was a son of Gardner D. Williams, who came to Saginaw in 1827, and who built the first saw mill on the Saginaw River, in 1832. Mr. Williams was the first white child to arrive in Saginaw, and he was for many years the leading lumberman of that section. One of the finest wooden steamers on the lakes is named in his honor. Mr. Williams filled the office of Mayor of Saginaw, as well as other city positions.

The death of William N. Burton in this city recently has been the occasion of many a reminiscence among the old-time vessel owners and insurance men. Mr. Burton was the first light-keeper of the South Manitou light, and these were the days when lights and buoys on the lakes were few and far between. He was one of the first men to engage in the harbor tug business in Chicago. He was also the first inspector for the old Columbian Insurance Co., long since defunct, and continued in this business until a few years ago, and was interested in vessel property besides. He was 78 years old.

Messrs. Frank E. Kirby and Gilbert N. McMillan have returned from their European trip, after an absense of over three months. They had taken their periodical trip to England in the interest of the Detroit Dry-dock Co., to inspect the large shipyards, and to study the progress made in the work in that country. They returned to America on the Teutonic, and fears for their safety were entertained for several days. Mr. Kirby says that the building of merchant shipping in England is as dull as in America, but at every big yard there is a man-of-war or two in process of construction. At one yard there is a Japanese man-of-war building, ordered before the China-Japanese war broke out, and which cannot be delivered until the trouble is over.

DULUTH, MINN.

Special Correspondence to The Marine Record.

The annual statistical number of the *Mississippi Valley Lumberman* contains several pages devoted to the lumber interests at the head of the lakes. The article covers the development of the industry from the time when August Zachan paid men $3 and $4 per day to manufacture boards by hand for the old Nicollet Hotel in Superior, which burned three years ago, just in time to prevent its falling to pieces from decay.

Heavy trains composed exclusively of coal cars are leaving for the interior and it is estimated that the daily shipments from the head of the lakes are about 11,000 tons, or 600 car loads. There has been much speculation as to whether the supply of coal would show heavy stocks of coal on hand at the opening of navigation. During the past fortnight the prospects for a big surplus have rapidly diminished with the disappearance of the stocks. Already there is a certainty that most of the companies will clean up their docks this spring and one of these is the Ohio Coal Co. A large amount of Superior's coal tonnage is going into what is known as competitive territory—that is, to points south and west of St. Paul and Minneapolis, where the rates are practically the same as those from Chicago.

The name of the new steamer which is being built by the Chicago Ship Building Co., for A. B. Wolvin and others, of this port, is to be the Zenith City and will be owned and operated by the Zenith Transit Co., of which Capt. Wolvin is president and treasurer and F. E. Searle, of the Marine National Bank, is secretary. Other Duluth men are interested in the venture. Capt. Wolvin has resigned the agency of the Western Transit Co., and will establish the office of the Zenith Co. in the new Board of Trade Building. This will be the first transportation com-

pany whose headquarters are located in this city. It is the Zenith City which is to be fitted out with the Babcock & Wilcox tubular boilers. A new departure in her construction will be the building of her cabins of steel instead of wood, as has usually been done heretofore. She will carry three spars and every convenience for the economical and rapid handling of the ship. She will carry two direct connecting dynamos of 150 sixteen-light candle power each. There will be 176 incandescent lights for cabins and hold and four arc lights for the spar deck.

PORT HURON, MICH.

Special Correspondence to The Marine Record.

Repairs to the steamer Australia are very nearly finished.

Both Dunford & Alverson's and the Wolverine drydocks report work very scarce.

The steamer Pawnee is being calked all over at the Wolverine dry-dock, besides receiving minor repairs.

Capt. Thomas Curry is making some repairs on the barge William Grandy, which was damaged by fire last fall.

Work on the barge Peshtigo is at a stand still for some unknown reason. She would make a fine barge if rebuilt.

A broken steam pipe in the steamer George Stone wintering here caused her cargo of corn to heat slightly She has 80,000 bushels on board.

The scow George Irwin is partly filled with water, and is badly listed. When the ice goes out of Black River the probabilities are that she will go with it.

Capt. F. I. Merryman reports that the ice on Lake Huron is thirty inches thick, and as clear as crystal, The lake is covered with ice as far out as the eye can reach.

Capt. Thomas Fish is making some extensive repairs on the tug J. P. Clark. He will go back to work for the dredging companies at Bar Point, Lake Erie, again next season.

Alex. Anderson is at work on a contract with Capt. Jesse H. Farwell, of Detroit, to build for the latter and his associates a new lumber steamer, into which the engine and boilers of the George L. Colwell will be plaeed, The Colwell will probably be cut down into a tow barge.

The steamer William F. Sauber is being fitted out, and will make an attempt to move from Millen & Son's coal dock to the Botsford elevator, to discharge her cargo of corn, which is heating and must be unloaded. The river is full of ice up to the waterworks dock, and the Sauber will be given an opportunity to show what kind of an ice crusher she is.

An enthusiastic meeting was held last Thursday evening, to take steps for the formation of a naval reserve corps. Sixty names were signed to a petition to be sent to the governor, and the following officers were chosen: Senior lieutenant, Frank Danger; junior lieutenant, George H. Brown; first ensign, John M. Gleason; second ensign, John S. Mann. The civil officers are: president, P. H. Phillips; vice president, James J, Lynn; secretary, J. J. Cronan; treasurer, Alex. Beard.

ASHTABULA HARBOR, O.

Special Correspondence to The Marine Record.

The Lake Shore Co. are doing considerable repairs on their No. 4 dock.

James G. Laird & Sons are re-piling and re-building the dock at their shipyard..

The tug association are cutting out the ice around their tugs to relieve the pressure on the hulls.

George McKenzie will give his lighter a new deck and re-calking as soon as the weather permits.

The Pennsylvania Co. will use their dredge Hercules for early spring work and do the intended repairs on her during the summer.

There is now 1,250,000 tons of iron ore on the docks, which is not more than 100,000 tons over the quantity on hand at this time last year. About 200 car loads are being sent out daily at the present time.

Capt. L. Young will command and Frank Mayberry will be chief engineer of the new car ferry steamer, Lady Aberdeen, which is now being built at Craig's shipyard at Toledo, and intended to run between Conneaut and Port Dover.

There is a rumor afloat that Capt. Sullivan, owner of the steamer Riverside, which ran between this port and Cleveland last season, is negotiating for a larger passenger steamer for the same route next season, and that the steamer Riverside will run between Cleveland and Lorain.

The Pennsylvania Co. will, it is said, put up a car discharging machine on the Haskell dock the coming season to be used in loading coal. Other contracts for coal handling machinery for loading vessels is talked of, and the Brown patent instead of the McMyler is likely to be adopted.

A launching way will be built in the spring from the boat house at the life saving station. It is probable that the life saving crew at this station will be increased to nine members, and one of the crew will be stationed on the west pier on the lookout for accidents which may occur at Woodland beach.

The government is taking soundings in the channel, through the ice, 600 feet outside the pier. The work of sounding is very difficult as the ice proper is 12 inches thick, and in some places it is piled 12 feet high. The soundings will be continued inside the pier the entire length of the government works. The appropriation of $75,000 made by the government, will deepen the main channel to a depth of 20 feet. This work will be commenced as soon as possible. The U. S. survey steamer, which was here last fall taking soundings for the new breakwater, will return as soon as the ice breaks up in the spring.

SANDUSKY, O.

Special Correspondence to The Marine Record.

Capt. J. A. Monk is building a steam yacht, which will be completed by the opening of navigation. She is 70 feet in length over all, by 16 feet beam and 7½ feet depth of hold. Her engine will be of the compound type, with cylinders 12½ inches in diameter, by 12 inches stroke. Her boiler will be of the Scotch type, 10 feet by 5 feet long. The sidewheel steamer Wellington R. Burt is undergoing a thorough rebuild at Monk's Ship Yard. Her engines are also being refitted.

Between Sandusky and the islands the ice is now so firm that trips by sleigh between the islands and the mainland are of daily occurrence. Much freight is also being moved which otherwise would be compelled to wait the opening of navigation. Wine in large quantities is being carted over the ice, and sugar sent to the winemakers in return. Freight rates are high, for the reason that the frighters assume all risks of transportation, and these are considerable because of airholes and fissures that are constantly developing.

The fourth annual ball of Marine Engineer's Benefical Association, No. 48, of this city, will be given Thursday evening, St. Valentine's Day, at Turner's Hall. A large number of tickets have already been sold, and the affair promises to be both a social and financial success. The invitations are particularly tasteful. The dancing programme contains 24 short numbers, the Belle Brooke Orchestra furnishing the music. Messrs. William F. Mayer, H. Jesson, John Magnussen, P. Ragen and J. Erving constitute the committee of arrangements, and Messrs. Clement Clark, John Hegemer, George Zanger, John Gaa and Nelson Lockhart the reception committee. The floor managers are George Moore, Charles C. Smith, C. Howard, H. Burkley and C. Bechtel.

MANISTEE, MICH.

Special Correspondence to The Marine Record.

The Ann Arbor car ferries Nos. 1 and 2, are fast in the ice off this port. They are about ten days out from Kewaunee. A week ago they tried to break into Frankfort, but without success. They kept at it, however, until short of coal and then pulled out of the ice Wednesday night and came here to coal up. There was a gale of wind and a heavy sea. Captain Ackerman, of the No. 1, found himself off this port at seven o'clock Thursday morning and the other boat was following astern. At that time the No. 1 had a full head of steam, but had just exhausted her coal. So they did not try to break through the heavy ice close in with the land, but worked in close enough to secure shelter from the rough water. The No. 2 followed for a time and then, thinking that the other had taken the bottom, she pulled out and worked up to the south about four miles, where she still lies. The No. 1 is a mile south of the piers and a third of a mile out from shore. As soon as possible, officers were sent ashore to provide for a new coal supply. Friday the lake was more quiet and the both boats were frozen in fast. They burned lumber from their cargoes to keep the boilers hot, but did not try to break out with this fuel. The tugs Frank Barnes and Annie L. Smith were placed in commission and the latter was chartered to go to Frankfort as soon as possible to assist in the harbor work. The Barnes got under way Friday, and pulled some caulking out on the starboard bow near the water line. She was kept afloat Friday night with her syphon, and repairs were made Saturday by listing her at the dock. Saturday a gang of men with picks made a road out to the No. 1, and they were soon hoisting coal aboard in sacks. This was kept up all night and all of the following day. The coal was hauled to the hurricane deck in sacks and dumped down a ventilator.

Sunday at noon the Smith got under way and started down the river to clear the channel. The Manistee River was never before frozen hard enough to bear a man's weight, but now it is frozen from five to nine inches thick, for three-fourths of a mile. The Smith was furnished with a hood of boiler plate, which was secured across the stem by ropes from both sides over the rail. It protected the stem well, but was awkward when backing up as it would then open like a fan and catch the loose ice. The Smith was not able to reach the mouth of the river, owing to thick ice in the bend. She could not hope to make any impression on the ice outside, but may follow the ice crushers to Frankfort when they are released. General Manager Ashley is here superintending operations in person.

The program at present is for the No. 1 to break her way in, coal at the M. & N. E. docks, and then proceed to the assistance of her sister boat, which must be worse off for fuel than herself. If successful, both will then make another try at Frankfort.

BEESON'S MARINE DIRECTORY.

In writing to THE RECORD regarding the 1895 edition of the marine directory, the author says: "As I cannot meet personally and make the acquaintance of all the patrons of my publication (Beeson's Inland Marine Directory) or of those whom I would like to interest in the work, either as subscribers for it annually or as advertisers of their business therein, I take the surest means of reaching them by placing my advertisement in another column of this issue of THE MARINE RECORD. I am certain, from eight years' experience in publishing this work, that I will always be glad to meet or correspond with anyone interested in the lake marine. And not only proud to know them, but to introduce to their notice my directory, which has annually interested and brought to its support as a publication of interest and value, an ever-increasing patronage. Not alone from the class of men who 'Go down to the sea in ships,' or more particularly my friends, the owners, masters, mates and engineers, but also from manufacturers and builders of articles used in the construction or equipment of vessels. These latter people use it to advertise in, circularize the trade and in the collection of accounts against vessels, as well as a book of reference between whose covers may be found much of general interest.

The pages or part devoted to a classified directory of all the interests connected with shipping, representing as it does the advance subscribers to the work only, is, in its near approach to completeness, the best possible testimony as to the large circulation of the directory. The work for 1895 will come from press April 15th and the advance orders are in excess, at this date, of those received in any previous year. As to advertising patronage, the new edition will contain the advertisements of a larger number and better class of people, on the whole, than have ever been represented in any previous edition of this or any other purely class directory. The impending changes in a number of laws and regulations relative to the rules of the road, etc., necessitate a revision of that portion of the work, which has alone commanded many subscriptions.

In the push to increase the success of my directory over previous years, its patrons have the best guarantee that it will be improved in its entirety, both as regards makeup and the value of its contents. A man to know his own business well and attend to it, cannot know very particularly or attend well to that of others. The business of my directory, however, is to attend to the advancement of the interests of its advertising patrons. And that it does further those interests is best shown by the fact that so many representative corporations, firms and individuals pronounce it a good thing and push it along.

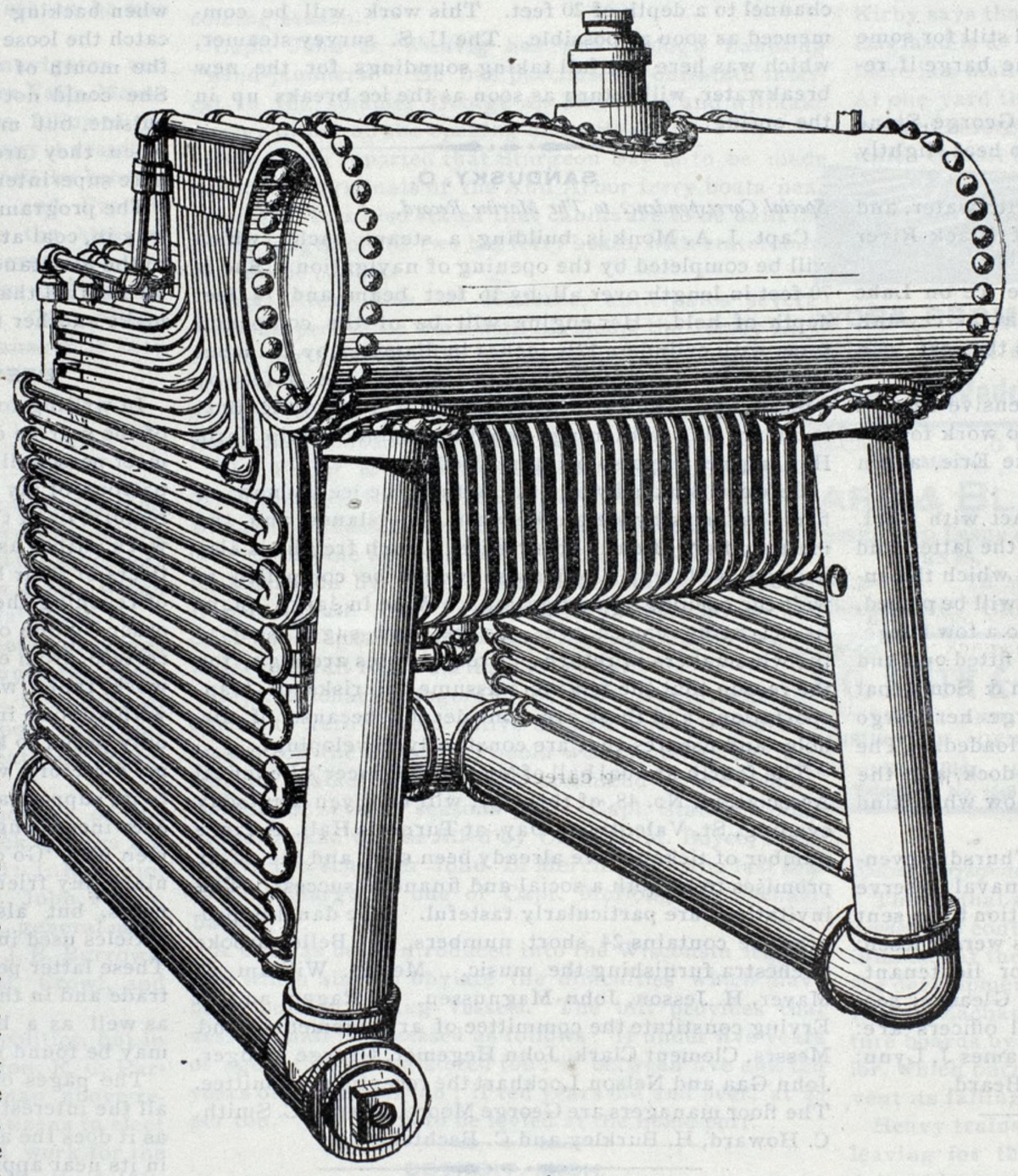
I want business on the basis of giving value for money. As to location of space and for rates, address Harvey C. Beeson, Detroit, Michigan."

THE BOYER'S WATER-TUBE BOILER.

(ILLUSTRATED.)

The steam yacht Rex, designed by engineer James Kaine, of L. Boyer's Sons, 90 Wall street, New York City, exhibited at the Columbian World's Fair in 1893, required to develop a speed of 31 miles per hour, a piston travel of 1,500 feet per minute of engines 5, 8⅛ by 13⅝ inches diameter, and ¾ feet stroke. The boiler requirements to furnish this great amount of steam at 300 pounds pressure, were such that of the many pipe boiler builders, there was only one firm who would guarantee to accomplish this, and their boiler would weigh 9½ tons, a weight sufficient to prevent great speed by so small a boat. The boiler designed to meet this condition weighed only 2⅛ tons. Is made of wrought iron tubes screwed together in sections and without any dead ends. It has no joints directly attacked by the heat from the furnace. It is provided with a steam drum of best steel plates double riveted, which is entirely removed from the heat of the furnace. There is a sufficient water space, a large combustion chamber with ample and very efficient heating surface. The casing is of sheet iron, lined on the inside with the best non-heat conducting material, and is easily removed for repairs. An arrangement whereby access may be had to any part of the boiler with the greatest ease and with the least delay, for the purpose of cleaning or repairing, or for the removal of any one or more of the parts, and the substitution of other duplicate portions, is also a feature of this new type. This boiler is so organized that, while provided with ample water and steam space, and capable of generating very large volumes of steam with great rapidity, it occupies an extremely small floor area and cubic space. It has no joints exposed to the direct action of the fire, a low center of gravity, a short, rapid and perfect circulation whereby the boiler is practically self cleansing, and has a uniform distribution of steam pressure. There is such an arrangement of the steam drum and water columns that the rupture of the joints, or the explosion of the boiler is impracticable. This boiler is adapted to marine engines of very high speed, to be used upon boats of light draft, when the utmost economy of space and weight, with ample strength, entire safety, a greatly amplified heating surface, a capacity of generating large volumes of steam with the utmost rapidity and uniformity, and an economical consumption of fuel, are all essential.

That the circulating of the water through the tubes is complete and rapid, is proved by the fact that after the season's (1893 and 1894) cruising on the Great Lakes and the St. Lawrence River, the Rex's tubes are clean and free from scale. The tubes of many pipe boilers become closed after cruising in these waters for one season. The Rex recently cruised from Albany, N. Y., to New York City, a distance of 144 miles, on 1,000 pounds of coal, thus showing the economy of this boiler.



BOYER'S PATENT SECTIONAL WATER-TUBE MARINE BOILER.

FROM DULUTH TO THE COAST.

The dream of the late Judge J. Logan Chipman, while a member of Congress, was to establish by national authority a deep waterway from Duluth to the sea. He was the originator of the effort looking to the establishment of that great national and commercial enterprise. The attempt to bring about this result culminated this week by the insertion by the Senate, in the sundry civil appropriation bill, of the Vilas amendment authorizing the President to appoint at once three persons who should have power to meet and confer with any similar committee appointed by the government of Great Britain, or the Dominion of Canada, and make inquiry and report whether it is feasible to build canals to enable vessels engaged in ocean commerce to pass between the Great Lakes and the Atlantic ocean, with an adequate and controllable supply of water for continual use; where these canals can be most conveniently located, and their probable cost with estimates in detail; and what regulations or treaty arrangements will be necessary between the United States and Great Britain to preserve the free use of the canal to the people of this country at all times.

MODERN MARINE ENGINE DESIGN.

At the last meeting of the Institution of Junior Engineers, held in London, a paper on "Marine Engine Design of To-day" was read by Hy. M. Rounthwaite. General considerations in regard to marine machinery were first dealt with, including weight, bulk, fuel consumption, speed, etc., and the requirements of the naval and merchant services were contrasted. It was shown how important to one another were the results obtained by each service. Naval work was necessarily of a pioneer or experimental nature to a greater extent than was merchant work; for that and other reasons naval engineering would in certain ways make the more rapid progress, especially in directions where economy in first cost was an all pervading condition. Illustrations were given showing the effect of the influence of naval on mercantile practice, the water-tube boiler being first referred to in this connection, the point being that its principle had been proved to be a good one. It had to recommend it lightness, ease of carrying almost any pressure, perfect steam generation, economy of fuel, and inexpensive production. As to material for tubes, solid drawn copper was totally unsuitable. It was probable that a very mild steel will prove the most unsatisfactory, but a drawn or longitudinally welded tube of whatever material must always be dangerous, and it was therefore to be hoped that tubes with spirally arranged fibre or joint would be obtained before long. Notwithstanding the competition of the tubulous boiler, the older cylindrical type would probably be used for many years to come, although modifications and improvements might be introduced in it to secure a better circulation and a partial cooling of the gases before they reach the back tube plates, such as by the interposition of additional tubulous heating surface. Recent developments in the construction of cylindrical boilers were shown from their character to be due not to attempts to introduce any new principle, but to the very low price at which steel plates of great size and weight could be had. Of artificial draught it seems likely that Howden's system—hitherto the only really commercially successful one—had at length met with a rival in that of Ellis & Eaves. Mr. Charles W. Whitney, 64, 66, 68 Broadway, New York, is the agent for Ellis & Eaves' system in the United States.

THE SHREWSBURY LIBEL.

The case of the steamer Shrewsbury, now in United States Circuit Court at Toledo, is one of the very few marine cases of this nature that get into the courts. The Buffalo & Niagara River Navigation Co., claimants, urge that this court has no jurisdiction in the case.

When Hubbard & Canfield originally purchased the Shrewsbury from the Buffalo company named, the purchase price agreed upon was $45,000; half of this was subsequently paid, although only a nominal payment of $2,500 was made at the time of purchase. Upon the application of Mr. Hubbard, G. G. Hadley was appointed receiver and a nominal sale of the steamer for the sum of $1,275 was made. The purchaser, this same navigation company, assuming responsibility of claims. That concern has since passed into liquidation. The steamer was seized by the United States marshal both before and after this receiver's sale, to doubly clinch matters. The seizures were made under warrants issued from the United States court.

Up to that time claims to the amount of about $5,000 had been filed. These claims were for supplies, repairs, equipment, etc. It should be understood that the seamen's wages came out of the $1,275 mentioned. Judge Ricks appointed George A. Bassett a special master commissioner to pass upon the claims, and to determine which were valid and which were invalid. These claims were regarded as still good against the firm of Hubbard & Canfield. The claim involved at this point was as to whether the boat could be held good for them, and another point was whether or not she was a foreign vessel, the Buffalo people retaining a legal title. Commissioner Bassett found that the Shrewsbury was a domestic vessel, with her home port at Toledo.

Another contested point was whether Sherman Canfield, who had previously leased the buildings and docks, was entitled to a lien for wharfage. It was held that he was seized of no such lien, as he was part owner of the vessel. Up to the time the boat passed into the hands of the Buffalo & Niagara River Navigation company, one-half of the purchase money had been paid, and it seemed hardly a matter of justice for that company to have the $22,500 and the steamer also. This point, however, was not passed upon. There were a number of claims for liquid refreshments which the commissioner refused to allow. Most of the legitmate supplies were furnished by Toledo parties, although there were a few claims from Buffalo About $4,000 in claims were allowed, and some $800 rejected. The boat is now really in the hands of the receiver of the Buffalo company, who has given necessary bond to the court here. While it is intimated that the steamer did not pay running expenses at any time, the testimony shows that during three months of actual service Messrs. Hubbard & Canfield paid $10,000 on the purchase price out of the earnings. This was while the Shrewsbury was plying between Toledo and Put-in-Bay. It now remains for the judge of the United States circuit court to pass upon the finding of Commissioner Bassett. Then, if either party is still dissatisfied, the court of appeals may be resorted to.

ALTHOUGH a large number of contracts for new tonnage have been placed at lake shipyards during the past two months, there are several important orders yet to be awarded, and it is safe to say that every yard will be as busy as possible before the opening of navigation.

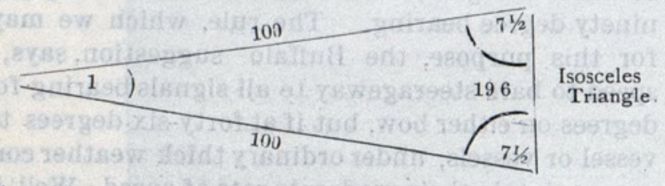
OBLIQUE SAILING.

CLEVELAND, February 13, 1895.

To the Editor of The Marine Record:

It seems the question from Port Sanilac contained in a recent issue of THE RECORD is a very simple one which almost any school boy ought to be able to figure out who had studied the higher mathematics, as it is only a very simple problem in oblique angled plane trigonometry, or in nautical language a problem in "oblique sailing," The two sides and enclosed angle given to find the other two angles and required sides of an isosceles triangle in each case so it is not necessary to enter into the question of difference of longitude or latitude, but only to get the distance apart of the two ships after sailing each 100 miles, both sailing from the same starting point in each case, and it does not matter whether it is sailed on a sphere or on a plane body if the two sides are alike the two required angles must be alike. In the first problem one vessel sails north, the other north by east, the inclosed angle being 1 point the two required would be the complement of 16 points, found as follows: To find required angles—

Sum of the three angles	16 points
Given angle	1 "
Sum of two required	15
The amount of each angle	7½ required.



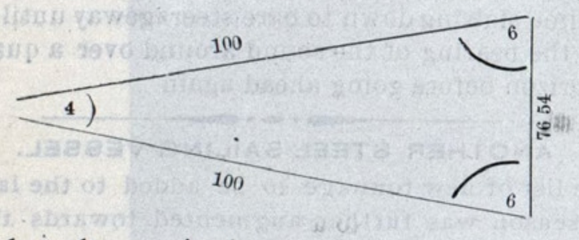
Isosceles Triangle.

To solve for required side.

As sine of 7½ points	9.997904
is to opposite side 100 miles	2.000000
so is sine of angle 1 point	9.290236
	11.290236
to required side	9.997904
Required side, 19.6	1.292332

or the distance vessels would be apart in first question.

Second problem, one sails north 100 miles, the other north east 100 miles, a difference in course 4 points leaving the other two angles required 6 points each:



To find angles required—

Sum of three angles	16 points
Given angle	4 "
Sum of required	2) 12 angles
each required angle	6 points

To find side required—

As sine of 6 points	9.965615
is to side 100 miles	2.000000
so is sine of given angle 4 points	9.849485
	11.849485
	9.965615
is to required side 76.54	1.883870

or the distance apart the ships would be in the second case.

CAPT. S. W. GOULD.

VESSEL TAXATION IN MICHIGAN.

Judge Maxwell, of Bay City, Mich., while of the opinion that it is a conspiracy for persons to combine for the purpose of evading taxation, expresses regret that the state legislature has not made some provision for specific taxes of corporations owning property. This is authorized by the constitution. It is true that if such specific taxes were imposed they would, under the present constitution; go to the school fund of the state, but even this would be better than the present system. Judge Maxwell says we had better have the taxation on this property even if the school funds receive all of it, rather than be deprived of it entirely, as is the case in many instances, as owners of boats make them hail from ports in other states, where there is a low rate of taxation. It is argued that vessel property should not pay taxes the same as other property, as it is not concerned in the expense of drainage, lawns, streets, lighting, sidewalks, parks, bridges and for eight months of the year has no use for police or fire protection, nor do all the vessels, or even a portion of them, always winter at a home port.

ANOTHER CANAL PROJECT.

Senator Turpie, in the Senate, and Representative Cooper, in the House, both of Indiana, have introduced resolutions providing for the appointing of a commission under the Secretary of War, to make a preliminary survey and submit plans and estimates for the construction of a ship canal to connect the south end of Lake Michigan with the Wabash River. The resolution recites that the project has been recognized as a work of great national improvement as far back as the administration of Andrew Jackson.

TACOMA COMMERCE.

Harbormaster Clift's report of the ocean commerce of the port of Tacoma for the month of January, 1895, is as follows:

IMPORTS.	VALUE.
7,515 tons of teas, silks, sugar, rice and curios,	$1,252,250

EXPORTS.

40,301 tons, distributed as follows:

291,895 bushels wheat, foreign	$133,390 00
307,533 " " coastwise	123,013 20
33,807 barrels of flour	78,214 00
3,143,173 feet of lumber	32,719 73
16,950 tons of coal	50,850 00
Canned and salt meats, condensed milk, cotton and tobacco	26,416 00
Total	$444,602 93

Inward registered tonnage	43,154 tons.
Outward " "	37,090
Deep sea arrivals	30
Deep sea departures	27
Nationality of arrivals:	
British	4
German	1
American	25

FATHER OF INLAND LLOYDS DEAD.

Captain Wm. D. Robinson died at Buffalo on Saturday last, at the age of seventy-seven years, after an illness of only ten days. He was well known on the lakes as the father of the Inland Lloyds Vessel Register.

Capt. Robinson was born at Detroit, March 4, 1818. At the age of twelve he removed to Buffalo, and remained a resident of that city until his death. He began his lake faring career as a cabin boy, and has ever since been more or less closely connected with the fresh water marine interests. As a lake master Capt. Robinson commanded such ships as the Greyhound and the schooner Great West, which was in her day the largest sailing vessel on the lakes. In 1856 he became agent of the Lake Navigation company, which had a fleet of fifty boats in its service. After remaining three years in that position, he became the chief inspector for the Home Marine Insurance Company, and it was while he was in the service of this company that he originated the Inland Lloyds Vessel Register. Capt. Robinson was a warm personal friend of President Cleveland during the latter's residence in Buffalo, and one of Mr. Cleveland's first acts as president was to appoint him Supervising Inspecter of Steam Vessels for the territority between Cleveland, O,, and Burlington, Vt., which he held during President Cleveland's first term of office. Since he gave up that position he has followed the business of insurance adjuster.

Captain Henry R. Draper died at Oswego, N. Y., the first of last week, having attained a ripe old age. In early life and mature manhood he followed the lakes, sailing the schooner Carliton and other vessels, but abandoned the mariner's life twenty-five years ago. He leaves three daughters and a stepson. One daughter is the wife of Chief Engineer Donovan, of the Dunham tug line, Chicago. The other three children live at Oswego.

NEW SMELTING PROCESS.

A few days ago a bill was introduced in the Minnesota legislature providing a bonus for the establishment of a steel plant at an undesignated point in that state. An investigation has disclosed the fact that a new and improved process of converting iron ore into steel has been discovered by a citizen of Minneapolis which promises to revolutionize this great industry. By this process, it is said, iron ore can be converted into steel at a cost not exceeding $5 per ton. After the ore has been by this process changed into steel, a very simple method has been discovered by which it can be rapidly transformed into all the grades of that article up to a material adapted to the production of edge tools, which require the finest article.

It is said, upon good authority, that representatives of Carnegie have already been in Minneapolis for the purpose of purchasing the patent for the new process.

ANOTHER LAKE NOVELTY.

Messrs. Farasey and Marron, Cleveland steamship agents and wharfingers, are working in connection with a syndicate of well-known but ultra-modest capitalists, at the organization of a company to operate a fleet of three small steel steamers and fifteen small tow barges of Erie canal boat size, to operate between Cleveland and New York city by way of Buffalo, the Erie Canal and the Hudson River. The new company will be incorporated under the laws of Michigan under the name of "The Steel Canal Boat Co.," and will be capitalized for $160,000, divided into 3,200 shares of $50 each.

The incentive to the organization of such a company was the success which an ordinary canal steamer and four barges met in trade between Erie and New York city, and the conclusion was reached that especially constructed steel boats would stand the weather on Lake Erie and would still be small enough to pass through the improved Erie Canal in tow of one steamer to five consorts. The company's prospectus says:

"The boats will be designed with especial reference to handling all classes of miscellaneous merchandise and package freight as well as grain, coal, and other bulk freight. They will be of the ordinary canal boat model with slight modifications, and with an extra high crown deck, somewhat of the 'whaleback' type, which is considered to be the best adapted to the Lake Erie part of the route. They will be constructed of steel throughout, on the most improved plans of modern marine architecture. The contract will call for the highest grade material and workmanship. The engines will be triple expansion, and boilers and all equipments will be of the most improved make. In addition to their steel bottoms they will have a sheathing of elm extending all over the bottom and around the bilges, as an additional precaution against damage from the bed of the Erie Canal. Drawings and specifications and bids have been received from various of the lake shipyards, and the present intention is to let the contract to the Globe Iron Works of Cleveland, which company ranks among the first of the steel ship building plants on the lakes. It is proposed to build three steamers and fifteen consorts—making three fleets composed of a steamer with five consorts each—this proportion of consorts to steamers being considered the best by experienced canal men."

The company expect to haul 24,000 tons of freight each way during the season when once started, counting on the very low average rate between Cleveland and New York of $2.50 per ton, or 12½ cents per hundred on package freight, the all-rail rates at present ranging from 17½ to 53 cents, and the lake-and-rail rates from 14½ to 44 cents. The company expects to make a handsome profit at unprecedented freight rates, relying on the Buffalo grain trade to help out in the dull seasons in east-bound business. As soon as organization is effected the order for the boats will be placed. A short time will be sufficient to turn out the barges, and the company may get to work in 1895.

TRANSFERS OF VESSEL PROPERTY.

The following transfers of vessel property have recently been recorded at the Grand Haven customs office: Steamer Soo City, Delta Transportion company to William H. Beach of Holland, $30,000; same, William H. Beach to Grand Rapids and Chicago Steamboat company, $60,000; schooner Phantom, S. D. Kenney, of Covert, to J. Jennings and Frank Stanberg of Holland, $162; tug McCormick, Thomas W. Kirby, of Grand Haven, to E. F. and L. D. Hawley, of Detroit, $2500; schooner George L. Wrenn, M. Shomer to C. D. Wiesner, of Ludington, $950; schooner Vermont, Hans Hanson to Mary Burmeister of Onekema, one-sixth, $183.33; same, Mary Burmeister to L. R. Morbach of Onekema, one-third, $760.66.

THE MARINE RECORD

ESTABLISHED 1878.

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CLEVELAND, O., FEBRUARY 14, 1895.

AN appropriation of $50,000 for Hay Lake channel has been stricken from the sundry civil bill because there is enough money on hand to carry the work along until June 30, 1896.

THE Weather Bureau, Department of Agriculture, has just issued a wreck and casualty chart of the lakes for 1894, showing an estimated loss to vessel property through weather conditions of nearly a million dollars.

MAJOR M. B. ADAMS, Corps of Engineers U. S. A. Light-house Engineer for the 9th and 11th Districts, is now receiving proposals for furnishing the boilers for ten steam fog signals to be delivered in Detroit.

THE Great Lakes will soon show to the mercantile marine world the relative efficiency and economy between the water tube and cylindrical or Scotch type boiler. Two steamers are now being built at the yards of the Chicago Ship Building Co., to be equipped with the different type of boilers, and a full, free and fair investigation will be made when these vessels are put in commission.

THERE is something to ponder over in the way that the officers of the French steamer "La Gascogne" were received at New York, when she arrived all well this week, after being several days overdue. Her detention was caused by a breakdown in her machinery and the engineers made it possible for the vessel to reach New York. On her arrival at that port the master was presented with floral wreaths, the bartender was cheered to the echo, but we hear nothing of the chief engineer. It would now be in order for the owners and underwriters to present the engineers with some substantial token of their appreciation.

THERE is an unusual activity among canal promoters at present both in the United States and Canada, the magnitude of these projects is not contracted by considerations of distance, engineering difficulties, or cost. Ship canals from Lake Michigan to the Mississippi, from Lake Michigan to Lake Erie, from Lake Superior to the Mississippi, from Georgian Bay to Lake Ontario, from Lake St. Clair to Lake Erie, and the enlargement of the St. Lawrence Canals so as to admit sea-going ships, or an alternative route by way of Lake Champlain to the Hudson River, find their advocates, and some of them are under serious discussion, with a probability that they will be undertaken at some time in the near future.

ONE of the lamest reasons for enacting certain marine laws was enunciated last week by a would-be statesman. He argued, that as a certain body had asked for a bill to be passed and there were no protests received against it, the bill should meet with the unqualified endorsement of both Houses, which it did. The merits of the measure appeared to be entirely out of the question and its passage hinged upon the statement that there was no outcry against its adoption, however, the protests in a mild form came to light later. On general principles, national legislation, nor any legislation at all, for that matter, ought never to be allowed to pass congress on negative qualities alone, or if so, it will simply result in making and repealing enactments at each session.

THE WHITE BILL.

There seems to have been a misunderstanding among Buffalo owners relative to the merits of the new rules of the road for the lakes, known as the White bill.

The greater part of the new rules is simply the revision of rules which have been in force on the Great Lakes for thirty years, while the new provisions are intended to meet the new conditions of lake commerce which have developed within the past ten years. The practice of towing began many years ago, and has obtained such a foothold that the necessity for some changes became apparent. The custom of towing is now placed at about one-third the total commerce, and it is believed that in two years more fully 50 per cent of the bulk freight will be carried in craft which have no steam propelling power, that is, in consorts being towed. For several years past, however, the masters of lake vessels have been fully aware that some improvements in and additions to the rules were needed, and for a year past the Ship Masters' Association has been working on a series of rules which they desired to have adopted. The new features which the law contains have been talked over for years, and were given careful consideration by masters. A few changes were suggested and made, and the result is a bill which, according to both fresh and salt water men, errs only in a possible excess of care for the safety of lake navigation, notably so in rule 15.

An owner opposed to the revised rules is quoted as saying that the bill "originated with the masters, and they persuaded enough of the vessel men to boom the thing along and secure its passage. It is simply a case of the persons who should be supervised making the laws." This statement is somewhat sarcastic and unjust, inasmuch as the board of supervising inspectors had, year after year, refused to make needed changes, even where glaring inconsistencies and impracticable movements had been pointed out to them, so that it eventually became a question of the supervised being compelled to exercise a supervision themselves, which they have accomplished in first-rate style; and, as for the safety of the revised rules, they actually draw the lines tighter than has ever been asked from any pilots or navigators before, though perhaps even the warmest advocates of the measure barely recognize or do not fully realize that such is the case. Anyone doubting the application of the revised rules may diagram all possible positions in which vessels can be placed, and then see whether the instructions given in the new code will not lead clear of trouble. The fact is, that the best and oldest of the international code of steering and sailing rules have been lifted bodily into the White bill, and any departures therefrom are, as we have said, for the special conditions existing in lake and river navigation, and to further enhance the safety of the rules used for nearly half a century. In this relation, we quote the rules from 16 to 28, and we find that the first seven rules are literally the old international code. Rule 23 is a qualifying clause, and a new one, making the use of passing signals compulsory, but the vessels must act in accordance with the preceding rules, and the fact that they must signal to tell others that they intend to comply with the law, is only considered as an extra safeguard applying only to the giving way craft, and carrying only the significance that she will give way. Rule 24 gives a descending steamer the right of way in the several rivers where a current is found. This also is an old and tried rule, nor can any objection be offered thereto. Rule 25 was strongly endorsed and adopted over the heads of the board of supervising inspectors by the Lake Carriers' Association two or three years ago, and the secretary had cards printed containing this rule, which at that time had not the sanction of law, yet the cards were placed on board vessels, and it was expected that the rule there given for meeting and passing in channels of less than five hundred feet in width would be lived up to. This was a wide open case of supervising the supervisors. Rule 26 simply forbids the use of cross signals and calls attention to the alarm signal being given if any misunderstanding takes place, both features being according to old-time lake practice. Rules 27 and 28 are old international rules, while the five sections of the latter rule are provisional ones only.

It is to be regretted that a perfect unanimity did not exist among managing owners, as the men who handle their tonnage are clearly at one on the new rules. It is learned, however, that a misconception of the rules induced some owners to protest against the code and after due consideration they have withdrawn their objections which, of course, is the most sensible thing to do under the circumstances. Now, let the owners have a wreck and casualty court of inquiry established so that they may know in the future if there is a loophole for the escape of carelessness, bad judgment or ignorance in the iron bound code of steering and sailing rules as at present established and which are likely to be adopted by the Canadian lake marine at an early date.

THE new "rules of the road" for the lakes has received the president's signature and is now law. The slight opposition to the bill which some Buffalo owners evinced could not weigh against the overwhelming force brought to bear on the president in favor of his signing the schedule of rules as passed by Congress. It has not developed what the objections were to the new code and judging from an unbiased standpoint it is difficult to see where any objections on the grounds of practical and safer navigation could have been advanced. The weakest spot appears to be in the rule suggested by a Buffalo owner wherein he reduces to bare steerageway vessels hearing a fog signal anywhere ahead, over an arc of ninety degrees or eight points of the compass. This feature rather neutralizes rules 18, 21 and 22 and slightly interferes with the free action or movement of the giving way vessel, in fact, rule 21 covers the ground fully without the weakness of an insistence upon determining sound to a degree, as now called for on the eight point or ninety degree bearing. The rule, which we may term, for this purpose, the Buffalo suggestion, says, reduce speed to bare steerageway to all signals bearing forty-five degrees on either bow, but if at forty-six degrees then the vessel or vessels, under ordinary thick weather conditions may maintain their moderate rate of speed. Well! it is perhaps best to err on the side of safety any way, though it goes without saying that never were seamen asked to locate sound in fog to a degree before. Surely an overtaking vessel was never thought of when the following clause was framed: "A steam vessel hearing, apparently not more than four points from right ahead the fog signal of another vessel shall at once reduce her speed to bare steerageway, and navigate with caution until the vessels shall have passed each other." A steamer proceeding at a moderate speed and coming up on a slow tow going the same way whose fog signal was heard apparently four points forward of her starboard beam would have a nice time slowing down to bare steerageway until she had drove the bearing of the sound around over a quarter of the horizon before going ahead again.

ANOTHER STEEL SAILING VESSEL.

The list of new tonnage to be added to the lake fleet next season was further augmented towards the close of last week by Messrs. Irwin & Oliver, of the American Transportation Co., Fairport, O., placing an order with the Globe Iron Works Co., of Cleveland, for a steel schooner with a capacity on the present depths of water of about 3,000 tons. The new vessel is to be 315 feet in length, 41 feet beam, and 23 feet molded depth. She will be fully equipped to take care of herself under canvas, having three spars and all fore and aft sails. A large boiler will furnish steam for handling ship and cargo. She will also have steam windlasses and capstans, and a "Globe" steam steerer. She is to be finished early next season, and will tow behind one of the two steamers now owned by the American Transportation Co., either the Alexander Nimick or the John Harper. The directors of this company prefer a vessel which will be able to take proper care of herself under all conditions, and in consequence have ordered a sailing craft in preference to the tow barge type.

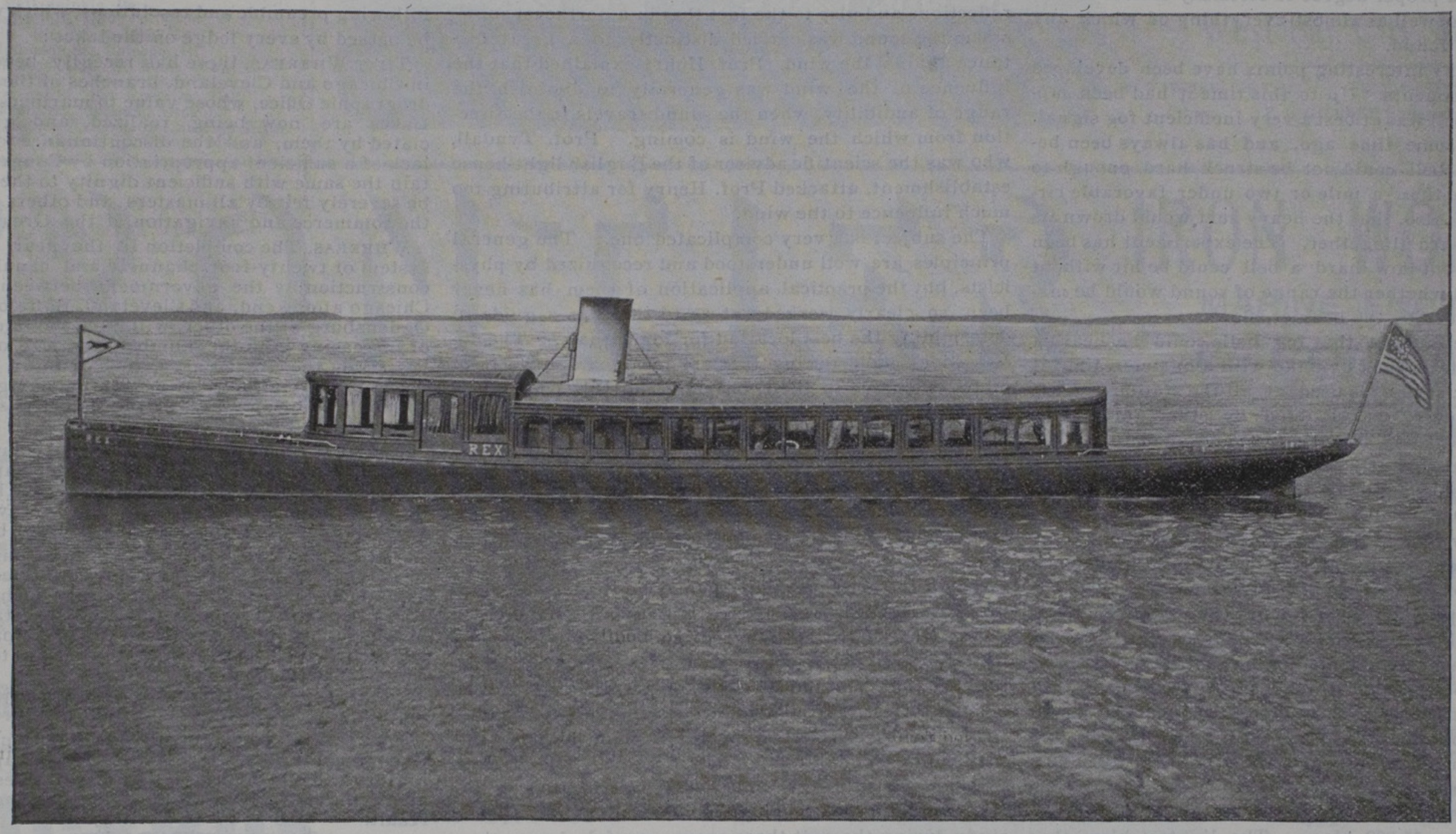
IT is to us a very significant fact that there are now about 406 blast furnaces now lying idle in Great Britain that will never be put into blast again and 126 finished iron works that will probably never be used again. Ryland's *Iron Trade Circular* adds: "We do not publish such a list with any idea of showing the decline of the iron trade, a subject which is a good deal talked about at the present time, as we are inclined to think that the present stagnation is nothing else than temporary and that good times will again appear. There have been many changes, but not more than we could have expected during nearly a quarter of a century. We have fewer works, but their capacity for production, especially the blast furnaces of the kingdom, has largely increased. The iron trade has shifted from some localities to another." And THE RECORD would like to add that the shift has been a trans-Atlantic one.

THE STEAM YACHT REX.

(ILLUSTRATED.)

A speedy little craft built in New York by L. Boyer's Sons, and sent to the lakes as an exhibit at the Columbian World's Fair, is the subject of the accompanying illustration. The general dimensions of the Rex are as follows: Length over all, 64 feet; on water line, 59 feet 7 inches; beam, 7½ feet; depth, 4½ feet; extreme draft at wheel, 3 feet. The hull is constructed with a keel of white oak. Frames are of steam bent white oak, placed six inches between centers with hackmatack floor frames, fastened through keel and keelson with brass screw bolts. The planking is double, the inside of ⅝ in. white cedar; the outside of ¾ in. mahogany, fastened with brass screws and plugged with mahogany. There are four bulkheads, two of which are water tight and help form the air tanks under the forward and after decks, which give a floating capacity of six tons. The deck house is built of mahogany, 40 feet long, and has 6 feet 7 inches of head room divided, into three compartments (pilot house, engine room and saloon), which are separated by glass and mahogany partitions. The pilot house, 12 feet long, is upholstered in leather and contains steward's pantry, refrigerators, lockers, dining table, etc. The engine room is 14 feet long, upholstered in leather and contains all of the machinery. Under the floors are copper water tanks of 300 gallons capacity. The two iron coal bunkers are of two tons capacity. The saloon is 14 feet long, upholstered in mohair plush and contains lockers, divans, buffet, lavatory and toilet with running water. The lavatory and toilet are separated from the saloon by an ingenious combination of folding doors. All the windows are of crystal plate glass, curtained, and have ornamental silk hangings. There is not a single nail used in the construction of the Rex, every wood being fastened by brass screws of which there were over 30,000 used. The workmanship displayed on this boat is equal to the best work.

The Rex was on Lake Michigan during the stormy month of October and leaving Menominee at 6 a. m., her pilot telephoned from Sturgeon Bay at 6:45 a. m, the vessel having covered the distance of 22 miles in the interval, as timed by the light-house keepers. It is admitted that the craft was pushed for all she was worth in this run, but the water was lumpy and the weather threatening, so that she was driven along at this lively rate to avoid worse weather. The builders and owners of the Rex, Messrs. Boyer, 90 Wall street, New York, are engaged in the water transportation business, and are designers of their own steam vessels in every particular, and it is noted that the speedy yacht fulfills their best expectations as to speed, comfort and safety.



WOODEN YACHT "REX"—A RECORD OF 31 KNOTS PER HOUR.

TO TAX SAIL VESSELS.

The tax assessors of the State of Maine and vessel owners have agreed on a bill taxing sailing vessels, which will be introduced into the legislature at once. The new schedule puts the valuation at $20 per ton on new vessels and provides a yearly reduction on valuation of $1. When 40 per cent of the value of a vessel is expended in rebuilding the age of a vessel is to be reduced one-half. This looks a good deal like putting a premium on unfinished hulls.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—OHIO.

FAIRPORT PIERHEAD (FRONT) LIGHT-STATION.—Notice is hereby given that the front tower on the E. pier at the entrance to Fairport Harbor, mouth of Grand River, Lake Erie, has been moved 122 feet to the northward of its former position, and the light will, on the reopening of navigation, be exhibited at a point 21 feet from the outer end of the E. pier. The focal plane of the light will be 37 feet above lake level, instead of 35 feet as formerly, and the geographical range of visibility of the light will be increased by a little more than ¼ statute mile. By order of the Light-House Board:

JOHN G. WALKER,
Rear-Admiral, U. S. Navy, Chairman.

AN ANCIENT CHARTER RECORD.

A Bay City vesselman, has a charter record that was used by a lumber forwarder on the Saginaw River in 1866. It shows that on April 23 of that year he chartered the schooner Seventh Ohio to take lumber from Saginaw to Erie, 123,000 feet, at $5 per 1,000; on May 26 he chartered the schooner Mary Baxter to take lumber from Bay City to Toledo, 304,000 feet at $4.75 per 1,000, and the day following he chartered a vessel to take lumber from Bay City to Chicago at $5 per 1,000. On June 14 he chartered a schooner for Buffalo at $6.50 per 1,000, and on June 24 he chartered the schooner Live Yankee, for Erie from Saginaw, at $9.25, but the shipper declined to load her at that figure and she loaded at Bay City for Buffalo at $8. In November of the same year the freight on lumber to Chicago was $7; $6.50 to Toledo and $8.75 to Buffalo.

FLOTSAM, JETSAM, AND LAGAN.

Capt. Charles M. Elson, whose schooner H. B. Moore was driven upon the Indiana shore during the great northeast gale of May 18, 1894, and still rests in the sand apparently uninjured, is seriously ill at his home in Chicago.

The whaleback passenger and freight steamer Everett will go into commission at Everett, Wash., in a day or two with Capt. R. D. Bucknam, formerly of the steamer G. L. Colby, in command, and Capt. Gibson as first officer and pilot. Robert Blauvelt of Superior, is chief engineer. Capt. Robert Smith, of the whaleback excursion steamer Christopher Columbus, will make a few trips in the Everett. Her first trip will be with coal from ports in British Columbia to San Francisco, and she may continue on that route all season.

The steamer Germania and schooners William Case and H. C. Sprague were sold by the United States Marshall at Toledo, recently, to satisfy a number of claims against the owners, Messrs. Jerry Champaign and J. G. Hannon, of Bay City, Mich. The bidding was spirited and lively, but the Germania was finally bid in by Mr. Eddy, of Bay City, for $5,600. It is understood this sale is in the interest of the original owners. The Sprague and Case were both knocked down to Attorney Samuel Kohn, the Sprague bringing $1,720, and the Case $505. The boats were libeled as follows: Hausheer & Sons, $232,04; Standard Oil Co., $119.68; River Machine & Boiler Co., $143.93; O. L. Jenks et al., $85.80; F. B. & W. H. Hower, $84.18; George Sanderson & Son, $20.65; Stanley B. Smith, $55; George Brown, $36 03.

The Lairds are repairing their dock at Ashtabula, where it was damaged last fall by the Rube Richards.

Capt. Thomas Williams, associate editor of THE MARINE RECORD, that excellent weekly published at Cleveland, is in the city looking after the interests of his paper. He is on an extended tour of lake ports and will remain in town a day or two. During the season of navigation Capt. Williams looks after the marine news of Lake Michigan for THE RECORD.—*Ashtabula Beacon.*

The ore business on the Shenango is picking up now right along, and the management contemplate doing a heavy business in both ore and coal the coming season, especially after navigation opens. Station agent Truesdale thinks that he is safe in saying that the Conneaut branch will double its business of last year, and this means that much more business for Conneaut harbor.—*Conneaut Reporter.*

FOG SIGNALS AND THE AUDIBILITY OF SOUND.

Fog signals have been developed to a greater extent in the United States than anywhere else, and all other countries look to us for precedent and advice. Some 20 years ago, between 1870 and 1875, Gen. Duane who was in charge of the first and second light-house districts, made some experiments to determine the relative merits of different kinds of fog signals. Since then no systematic experiments of this kind have been made until during the last year or two, when Maj. Livermore has taken up the work where Gen. Duane left it. At about the same time Prof. Henry of the light-house board, was making experiments, but his work related particularly to the audibility of fog signals at a distance, and to the manner in which audibility was effected by conditions of air. Since then, a great deal of work has been made by the board and others in charge of the districts, but no general investigation had been carried on until Maj. Livermore commenced his work a year ago last summer.

These experiments with different appliances and means of general sound, are not complete, but the work of testing their audibility has gone so far that he is able to explain to a proper degree of certainty almost all the phenomena, as well as almost everything of which any record can be found.

A great many interesting points have been developed in these experiments. Up to this time it had been supposed that a bell was at best a very inefficient fog signal. It was said, some time ago, and has always been believed, that a bell could not be struck hard enough to be heard more than a mile or two under favorable circumstances. Also, that the heavy surf would drown its sound to seaward altogether. The experiment has been made, to find out how hard a bell could be hit without cracking, and whether the range of sound would be materially extended by the heavier blows.

Gen. Duane thought that fog bells could be heard a good deal better struck by hand with a hammer, than if by clockwork, such as is used at all the stations. This opinion, however, was doubted by other authorities. Experiments of Maj. Livermore have shown that the power and consequently the range of sound is increased by increasing the force of the blow up to the full limit of the bell's endurance. The ordinary clock machinery strikes a blow with a force of about 8 foot pounds. A 4,000-pound bell was mounted at Boston light and struck with a blow of 350 foot pounds until it was cracked. It was kept in operation several months and did not crack until after it had received 18,000 blows with a cast iron hammer. Then a 3000-pound bell was tried with a blow of 150 foot pounds, and it took six weeks of constant hammering to break it, 82,000 blows in all. A 1000-pound bell was kept mounted on a light-house tender, and struck by a machine that gave a blow of 175 foot pounds. This was carried round on the light-house tender Myrtle for several months to the light stations and it broke after receiving 11,000 blows. The lightest blow that has been tried so far is about 20 times as great as that now employed at any of the stations, and there seems to be every reason for believing that by increasing the force of the fog bells now in use, they can be made at least four times as effective and yet stand the hammering for many years.

The 4,000-pound bell has been heard distinctly at a distance of 12 nautical miles, and has been heard 8 miles against a wind of 10 miles an hour. A 1000-pound bell was generally heard about 8 miles in favorable and four miles in unfavorable circumstances.

The other fog signals in use are sirens, whistles and horns or trumpets. The sirens or whistles are very powerful signals operated by steam, but they require a considerable use of coal. The trumpets are operated by air that is compressed by caloric engines. These engines have been employed for three reasons. They are very economical and use only one-eighth as much coal as the steam boilers; they are free from the danger of explosion, and require no water. This last is a very important consideration, because at some of the coast stations the rain water has at times given out, and salt water had to be used which destroys the boiler in a very short time. Most of these engines are of the old Ericsson type, are very clumsy, and are always getting out of repair. A new type of caloric engine is in use at one of the stations.

The siren is the most powerful of all the signals and the range of the siren, whistles and trumpets has generally been estimated in the ratio of 9, 7 and 4. The consumption of fuel is about in the ratio of 9, 6 and 1. All comparisons heretofore have been made between instruments of very unequal power. The whistle or siren that makes the same noise as a trumpet now in use requires more coal to produce the same effect. But it won't do to infer from this that a trumpet is the best instrument, because if its power is limited it may be necessary to get the better instrument at any cost. In order to give the better instrument a fair test, Maj. Livermore has made a trumpet very much larger than any ever made before and when the weather is favorable the experiments will go on, as it is impossible to work to advantage in the winter.

The experiments which have been made by Maj. Livermore have also been directed to determine the audibility of fog signals at a distance. Owing to the state of the atmosphere the most powerful signal frequently cannot be heard even at a very short range, sometimes not half a mile away. The sound is entirely lost and the cause has been attributed partly to the condition of the atmosphere and partly to the surrounding objects. Gen. Duane called attention to the effect of a heterogeneous atmosphere in breaking up the sound by continued reflections and also to the fact that in a northeast snowstorm the sound was carried distinctly to a great distance against the wind. Prof. Henry explained that the influence of the wind was generally to diminish the range of audibility, when the sound travels in the direction from which the wind is coming. Prof. Tyndall, who was the scientific adviser of the English light-house establishment, attacked Prof. Henry for attributing too much influence to the wind.

The subject is a very complicated one. The general principles are well understood and recognized by physicists, but the practical application of them has never been so clearly worked out as to serve as a guide in determining the best location for fog signals. The observations made during the last few years have been more extensive in their bearings on this point than any others that have ever been made systematically. Maj. Livermore has made a very elaborate report of all these observations, accompanied by charts and diagrams. The result of this work has been to remove from the subject the mystery which has surrounded it since the aberrations of audibility first attracted general attention.

One of the most peculiar phenomena is that described by Prof. Henry, as follows: "It frequently happens on a vessel leaving a station that the sound is suddenly lost at a point of its course and after remaining inaudible, it is again heard at a greater distance and is then gradually lost as the distance is further increased." Prof. Henry suggested several explanations for this with which Tyndall did not at all agree. The stations which give rise to this controversy are located on the New England coast. These have been made a special study during the past three years, careful observations have been taken of the temperature of the air and water, of the humidity of the air and the velocity of the wind, not only on the surface but in the higher regions. Toy balloons inflated with hydrogen have been sent up from steamers and from shore and every possible method has been used to ascertain not only the nature of the causes at work, but also whether these influences are powerful enough to produce the observed results. The action of the wind on the sound of a fog signal is not so much in retarding the velocity with which the sound is propagated as in tilting up the ray of sound, so that it passes above the head of the observer. This causes a refraction similar to the refraction of light in passing through different media. A difference in the temperature in the upper and lower strata of air also produces refraction.

ELECTROPLATING HULLS.

Paints and compositions innumerable have been tried to prevent marine growths from forming upon iron and steel vessels below the water line. Mr. Theodore D. Wilson, late chief naval constructor, says, "Thousands of dollars have been expended in the testing of protective and anti-fouling paints and compounds with very little encouragement to further experiments." A process controlled by the Ship Copper Plating Company, of New York, has just been put to a practical test in coating the iron hull of an ocean tug 98 feet long with copper to the thickness of one-twentieth of an inch.

By the new process the copper is electrically deposited in sections upon the surface of the vessel in successive rows, and the joints of the sections are overlapped during the electric deposition in such a manner as to perfectly unite the whole coating of the vessel. The entire surface below the water line, including the riveted laps of the steel plates, the keel, the stern and rudder post, are thus protected by an unbroken metallic sheet of copper. The baths are open upon one side, which is applied to the hull of the vessel, while supported upon blocks in the dry docks. The success of the plating stage of the progress is assured, and all that is needed to demonstrate the success of the process as a whole is a test in actual service to see if the coating has the permanency which there is every reason to believe it possesses.

LAKE HYDROGRAPHIC WORK ENDORSED.

The work of the branch hydrographic offices already established at Chicago and Cleveland, is meeting with the highest commendation from masters and pilots, and in fact from all interests related to lake commerce. The Shipmasters' Association of the Great Lakes, recognizing that an active endorsement of the service would most clearly represent their views, have drawn up the following preamble and resolutions, which will probably be passed by every lodge on the lakes:

THAT WHEREAS, there has recently been established in Chicago and Cleveland, branches of the National Hydrographic Office, whose value to mariners on the Great Lakes are now being realized, and greatly appreciated by them, and the discontinuance of which, for lack of a sufficient appropriation by Congress to maintain the same with sufficient dignity to the state, would be severely felt by all masters and others interested in the commerce and navigation of the Great Lakes; and

WHEREAS, The completion in the near future, of the system of twenty-foot channels and canals, now under construction by the government between Duluth and Chicago at one end, and Cleveland, Buffalo, Oswego and Ogdensburg at the other, will have the immediate effect of increasing both the number and size of deep draft vessels on the Great Lakes, thus making accurate and prompt information relating to the navigation of the channels and waterways of the same, absolutely indispensible; and

WHEREAS, The magnitude of the commerce of the Great Lakes and their tributaries demands the same protection and encouraging interest that has for years been exercised by the government in favor of ocean-going tonnage and commerce. therefore, be it

Resolved, That we call the attention of our legislators, in the Senate and House of Representatives, in Congress assembled, and urge the same to take such action at the Navy Department, and in Congress, to establish branch hydrographic offices at each of the principal lake ports, and to provide a sufficient appropriation to enable the Navy Department to extend to the Great Lakes, in an adequate degree, the nautical benefits enjoyed by mariners of the oceans and seas; and it is further

Resolved, That copies of these resolutions be sent to Commander Charles D. Sigsbee, hydrographer at Washington, and our Senators, Representatives and others, and request their assistance in securing the desired result.

LUMBER NOTES.

Joseph Mann arrived here on Sunday evening on a business trip for Messrs. Cutter & Savidge, lumbermen, of Kenabutch. This firm has taken out 20,000,000 feet of logs since August, and expects before the winter's work is completed to have another 5,000,000 feet. The weather has been exceptionally favorable to lumbering firms throughout the district.—*Sault Ste. Marie News.*

There are many evidences of an improvement in the lumber trade in Canada. At Thackray's mill, Ottawa, 200,000 feet of red pine are being kiln dried and made into flooring for the American market.

An immense amount of lumber will be cut at the Chequamegon Bay mills the coming season, and freight ought to be proportionately active. It is said that a rate of $2 25 has already been offered for the first shipment to Chicago.

Inquiries from lower lake lumbermen are being received pretty regularly for stock to be sent on next spring, but with the exception of that of the Cranberry Lumber Co., and one or two other concerns, there is no lumber on dock for sale. Not only is all the lumber now in cross pile, intended for eastern shipment, sold, but contracts have been made for lumber yet in the log. It is stated that Mitchell & McClure, who are the heaviest operators at Duluth, have contracted the major portion of their prospective cut next season, and this is also the understanding with reference to one or two other mills. —*Northwestern Lumberman.*

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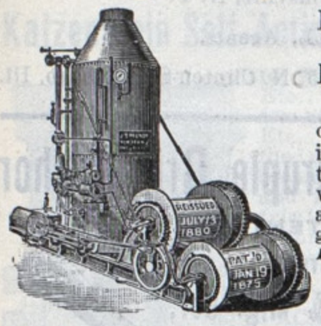

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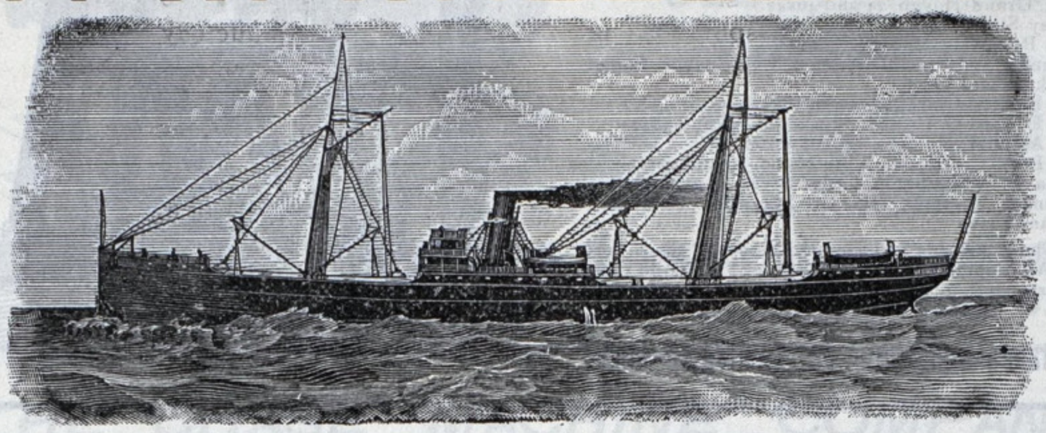

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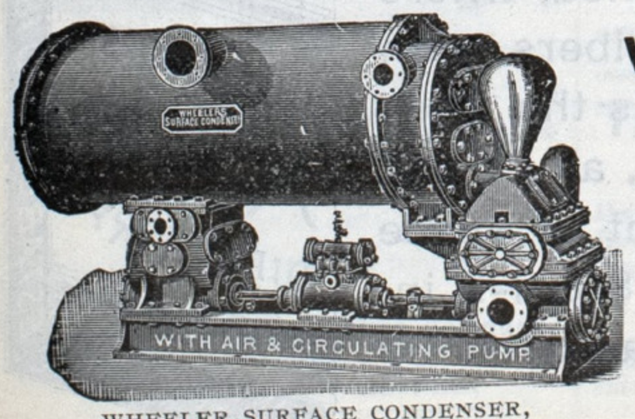

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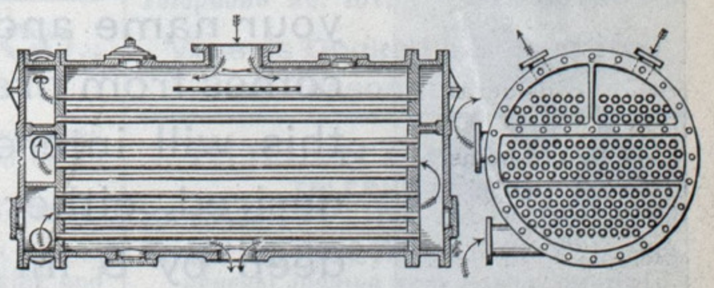

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PROPOSALS.

U. S. ENGINEER OFFICE, 34 West Congress St., Detroit, Mich., January 30, 1895. Sealed proposals for furnishing all labor, materials and appliances for A, Removing Portions of a Shoal at the Upper End of Hay Lake Channel and for B, Cleaning up Shoals near Nine Mile Point, Hay Lake Channel, will be received here until 2 p. m., March 1, 1895, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application. O. M. POE, Col. Corps of Engineers, U. S. A., etc. 5-8

U. S. ENGINEER'S OFFICE, Duluth, Minn., January 28, 1895. Sealed proposals for furnishing cement, broken stone, sand, iron and timber for concrete superstructure to breakwater at Marquette, Mich., will be received here until 12 m. February 28, 1895, and then publicly opened. Further information furnished upon application. CLINTON B. SEARS, Maj. Engineers. 9-B

OFFICE OF LIGHT-HOUSE ENGINEER, 9th and 11th Districts, Detroit, Mich., Feb. 11, 1895. Sealed proposals will be received at this office until 3 o'clock p. m. on Saturday, the 2d day of March, 1895, for furnishing the boilers for ten steam fog signals, in sets of two, delivered at the Light-House Depot at Detroit, Michigan. Plans, specifications, forms of proposal and other information may be obtained on application to the undersigned. The right is reserved to reject any or all bids and to waive any defects. M. B. ADAMS, Major, Corps of Engineers, U. S. A., Light-House Engineer. 7-9

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Tug, Edward G. Crosby, Muskegon, 16 and 30x24.
Oval Agitator, Chicago, 14 and 28x20.
Tug, Peter Coates, Sault Ste Marie, 10 and 20x16.
Luella H. Worthington, Cedar River, 19 and 36x30.
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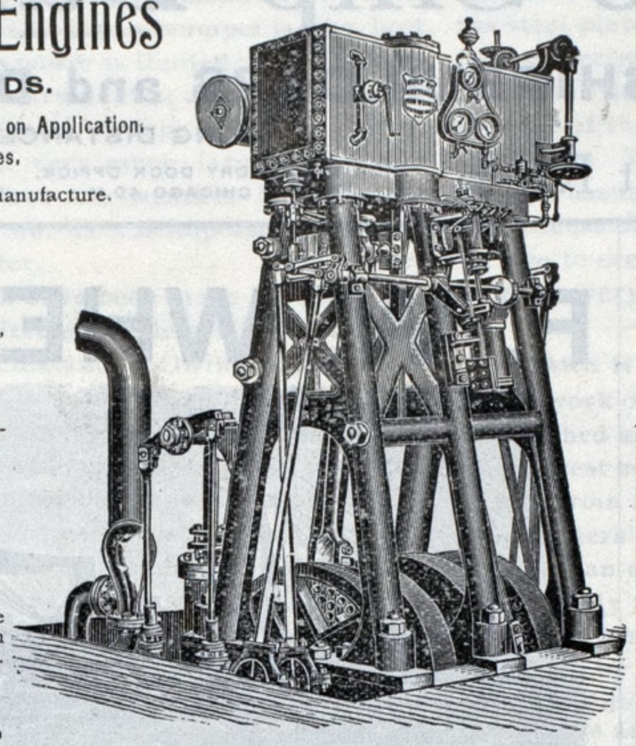

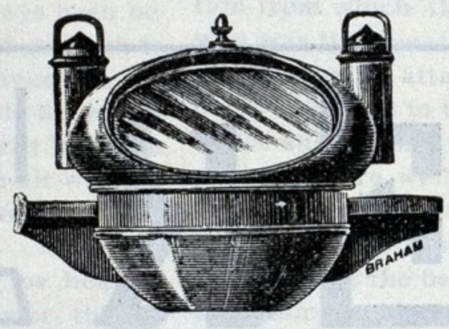

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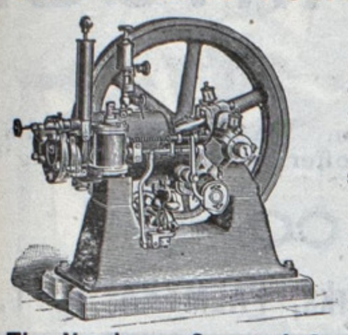

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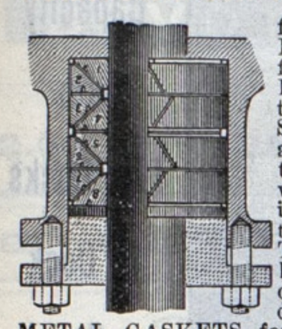

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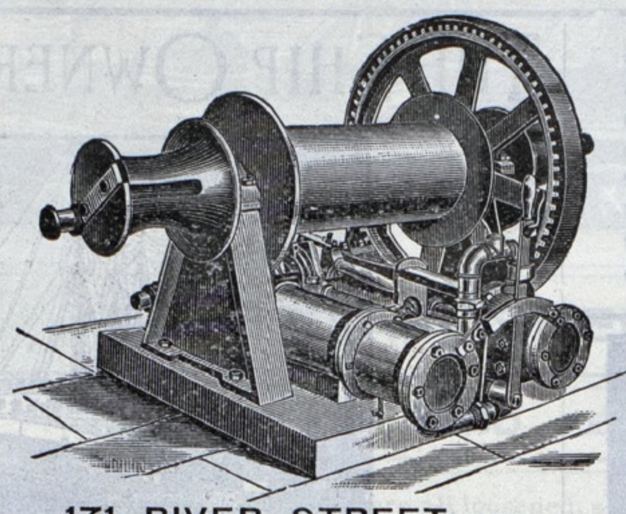

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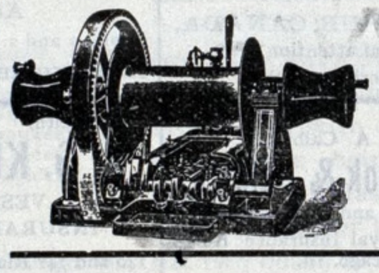

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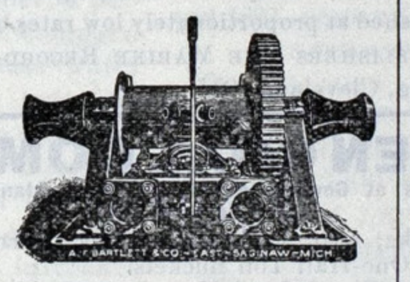

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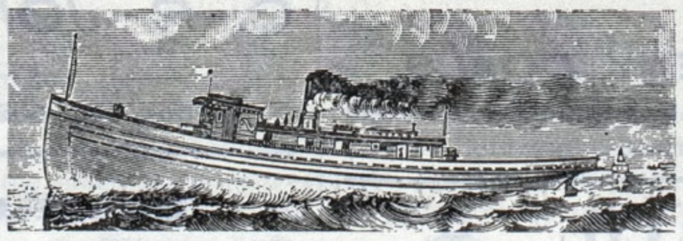

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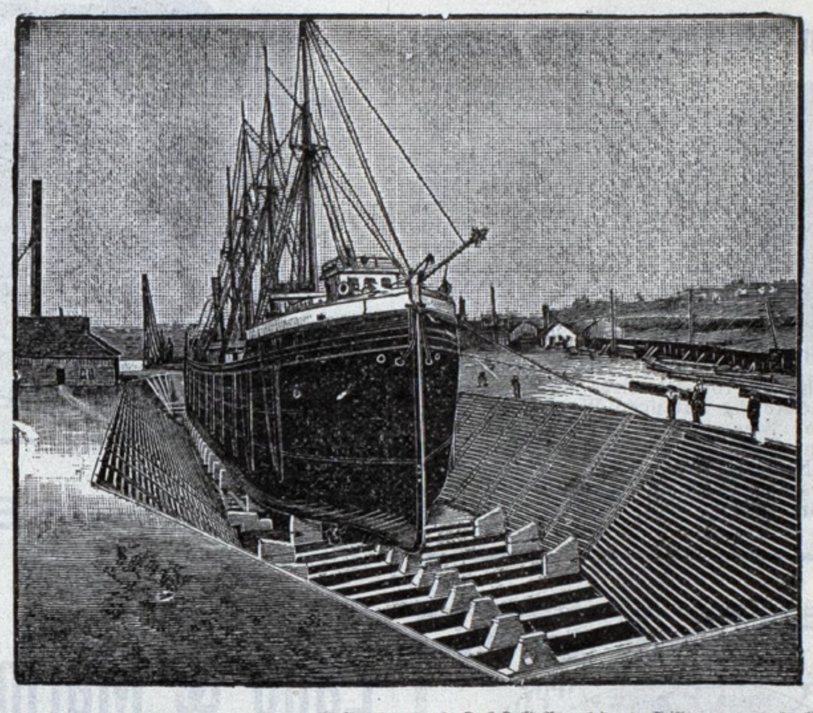

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